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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RAGHU, GANAPATHIRAM	
ART UNIT	PAPER NUMBER
1652	

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06/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/855,320	BAYER, ROBERT	
	Examiner	Art Unit	
	GANAPATHIRAMA RAGHU	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *107 and 108* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *107 and 108* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05/14/2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *SEQ ALIGN*.

Application Status

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/07 has been entered.

In response to the Final Office Action dated 09/18/2007 and an Advisory dated 03/04/08, applicants' filed an RCE received on 04/08/08 and amended claims 107 and 108. However examiner would like to state for the record certain discrepancies found in the applicants' response:

Following the Final Office Action dated 09/18/2007 applicants' filed a response, letter dated 01/18/2008 (Remarks/Arguments) and an amendment to claims: the face of said response and amended claim sheet bears the application number "Appl. No. 10/198,806"; Appl. No. 10/198,806 was a co-pending application that has been abandoned. Since claims 107 and 108 are directed to the subject matter of application No.: 09/855,320, examiner is treating the response by the applicants' to be directed to the instant application No.: 09/855,320.

Amended claims 107 and 108 are pending and are under consideration in the instant Office Action.

Objections and rejections not reiterated from previous action are hereby withdrawn.

Withdrawn- Claim Rejections: 35 USC § 112

Previous rejections of claims 107 and 108 rejected under 35 U.S.C. 112, first paragraph for enablement and written description is being withdrawn due to amendments to the claims.

Withdrawn- Claim Rejections 35 USC § 103

Previous rejections of claims 107 and 108 rejected under 35 U.S.C. 103(a) as being unpatentable over Palcic (1989) or Ichikawa et al., (1992) and in view of Weston et al., (1992) and Kimura et al., (1999) (all the cited references are in IDS under prior art references) is being withdrawn due to amendments to the claims.

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. The specification contains hyperlinks to various site domains, for example on page 26. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. Appropriate correction is required.

New-Matter/Objection to Specification

Applicants have submitted an amendment to the specification and claims incorporating SEQ ID NO: 1 and SEQ ID NO: 2 with the arguments, "applicants note that the amino acid sequences of wild type FucT-VI and FucT-VII were known at the time of filing of the patent application and incorporated by reference (see spec. page 24, lines 9-10)". This assertion is incorrect. For the record examiner has reproduced said section (lines 4-15 of page 24) from the specification filed on 05/14/2001.

In other embodiments, it is desirable to use a greater amount of enzyme. For example, to obtain a faster rate of reaction, one can increase the amount of enzyme by about 2-10-fold. The temperature of the reaction can also be increased to obtain a

faster reaction rate. Generally, however, a temperature of about 30 to about 37° C, for example, is suitable.

The efficacy of the methods of the invention can be enhanced through use of recombinantly produced glycosyltransferases. Recombinant technique enable production of glycosyltransferases in the large amounts that are required for large-scale glycopeptides modification. Deletion of the membrane-anchoring domain of glycosyltransferases, which renders the glycosyltransferases soluble and thus facilitates production and purification of large amounts of glycosyltransferases, can be accomplished by recombinant expression of a modified gene encoding the glycosyltransferases. For a description of methods suitable for recombinant production of glycosyltransferases see, US Patent No. 5,032,519.

A perusal of said section (reproduced above) clearly reveals that the applicants' have not explicitly stated "incorporated by reference", examiner deems that amendments to the specification and claims as new-matter.

The amendment filed on 01/18/2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: page 26, lines 1-29 specification filed on 01/18/2008 are new matter. Support has not been provided for the newly added subject matter and no support is found in page 26, lines 9-10 as suggested by the applicant in the response dated 01/18/08. The scope of nucleic acid sequences; SEQ D NO: 1 and SEQ ID NO; 2 as claimed were not contemplated in the specification as originally filed dated 05/14/2001.

Applicant is required to cancel the new matter in the reply to this Office Action.

New Matter-Claim Rejections 35 USC § 112

Amended claims 107 and 108 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 107 and 108 are rejected because the phrase (subject matter) "SEQ ID NO: 1 and SEQ ID NO: 2" is new matter. The scope of nucleic acid sequences as claimed was not contemplated in the specification as originally filed as said sequences were never incorporated by reference in the originally filed specification dated 05/14/2001.

New-Claim Rejections 35 USC § 102

Amendment to claim 107 has necessitated a new rejection.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 107 is rejected under 35 U.S.C. 102(b) as being anticipated by Lowe JB[1] (U.S. Patent No.: 5,324,663, date of patent 06/28/94) or Lowe[2] et al., (U.S. Patent No.: 5,770,420, date of patent 06/23/98) when given the broadest reasonable interpretation.

Claim 107 is directed to a method for modifying the fucosylation pattern of a recombinant polypeptide comprising an acceptor moiety (Galβ1, 4GlcNAc-OR or NeuAcα2, 3Galβ1, 4GlcNAc-OR, wherein R is an amino acid, a saccharide, an oligosaccharide or an aglycon group), said method comprising a reaction mixture that comprises a fucose donor moiety, eukaryotic fucosyltransferase to achieve substantially uniform fucosylation pattern and said eukaryotic fucosyltransferase is recombinantly

produced FucT-VI of SEQ D NO: 1 or FucT-VII of SEQ ID NO: 2 and wherein said eukaryotic fucosyltransferase lacks a membrane anchoring domain.

Lowe JB[1] disclose an isolated polypeptide (SEQ ID NO: 14) annotated as FucT-VI having 100% sequence homology to SEQ ID NO: 1 of the instant application and lacking a membrane anchoring domain and a method for modifying the fucosylation pattern of a recombinant polypeptide as claimed (entire document; especially column 2, lines 25-35; donor moieties, columns 8-10; use of said glycosyltransferase in enzymatic reactions to produce glycoproteins, glycolipids, oligosaccharides or polysaccharides of interest, column 13; recombinantly produced glycosyltransferase and abundant quantities of purified glycosyltransferase and use of said enzyme in solutions or solid matrix as bioreactors capable of enzymatic synthesis of glycoproteins column 16, lines 5-11; especially fucosyltransferase lacking membrane anchoring domain, columns 19-20; mechanisms for producing purified enzyme by the use of antibody affinity columns or fusion proteins comprising *Staph. aureus* protein A, columns 26-27 and column 46; Example VI cloning, expression of SEQ ID NO: 14 including polypeptide lacking the membrane anchoring domain, purification of expressed enzyme to high purity using affinity columns and fucosyltransferase assays, columns 87-92).

Lowe[2] et al., disclose an isolated polypeptide (SEQ ID NO: 14) annotated as FucT-VI having 100% sequence homology to SEQ ID NO: 1 of the instant application and lacking a membrane anchoring domain and a method for modifying the fucosylation pattern of a recombinant polypeptide as claimed (entire document; especially column 2, lines 25-35; donor moieties, columns 10-12; use of said glycosyltransferase in

enzymatic reactions to produce glycoproteins, glycolipids, oligosaccharides or polysaccharides of interest, column 14; recombinantly produced glycosyltransferase and abundant quantities of purified glycosyltransferase and use of said enzyme in solutions or solid matrix as bioreactors capable of enzymatic synthesis of glycoproteins column 13; especially fucosyltransferase lacking membrane anchoring domain, column 21; Example VI cloning, expression of SEQ ID NO: 14 including polypeptide lacking the membrane anchoring domain, purification of expressed enzyme to high purity using affinity columns and fucosyltransferase assays, mechanisms for producing purified enzyme by the use of antibody affinity columns or fusion proteins comprising *Staph. aureus* protein A, columns 87-93).

Therefore the references of Lowe JB[1] (U.S. Patent No.: 5,324,663, date of patent 06/28/94) or Lowe[2] et al., (U.S. Patent No.: 5,770,420, date of patent 06/23/98) is deemed to anticipate claim 107 as written (also see provided sequence alignments).

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 107 is rejected under 35 U.S.C. 102(e) as being anticipated by Lowe JB[3] (U.S. Patent No.: 6,268,193, date of patent 07/31/01, claiming priority to US Application No.: 09/042,531 filed on 03/17/1998) or Sasaki et al., (U.S. Patent No.: 7,094,530, date of patent 08/22/06, claiming priority to US Application No.: 08/361,306 filed on 11/29/1994), when given the broadest reasonable interpretation.

Claim 107 is directed to a method for modifying the fucosylation pattern of a recombinant polypeptide comprising an acceptor moiety (Galβ1, 4GlcNAc-OR or NeuAcα2, 3Galβ1, 4GlcNAc-OR, wherein R is an amino acid, a saccharide, an oligosaccharide or an aglycon group), said method comprising a reaction mixture that comprises a fucose donor moiety, eukaryotic fucosyltransferase to achieve substantially uniform fucosylation pattern and said eukaryotic fucosyltransferase is recombinantly produced FucT-VI of SEQ D NO: 1 or FucT-VII of SEQ ID NO: 2 and wherein said eukaryotic fucosyltransferase lacks a membrane anchoring domain.

Lowe JB[3] disclose an isolated polypeptide (SEQ ID NO: 14) annotated as FucT-VI having 100% sequence homology to SEQ ID NO: 1 of the instant application and lacking a membrane anchoring domain and a method for modifying the fucosylation pattern of a recombinant polypeptide as claimed (entire document; especially column 2, lines 25-35; donor moieties, columns 8-10; use of said glycosyltransferase in enzymatic reactions to produce glycoproteins, glycolipids, oligosaccharides or polysaccharides of interest, column 13; recombinantly produced glycosyltransferase and abundant quantities of purified glycosyltransferase and use of said enzyme in solutions or solid matrix as bioreactors capable of enzymatic synthesis of glycoproteins columns 13-15; especially fucosyltransferase lacking membrane anchoring domain, column 19; Example VI cloning, expression of SEQ ID NO: 14 including polypeptide lacking the membrane anchoring domain, purification of expressed enzyme to high purity using affinity columns and fucosyltransferase assays, mechanisms for producing purified enzyme by the use of antibody affinity columns or fusion proteins comprising *Staph.*

aureus protein A, columns 83-90; recombinantly purified fucosyltransferase isolated with grater than 95%-98% purity with very high specific activity; claims 1-10, columns 123-124).

Sasaki et al., disclose an isolated polypeptide (SEQ ID NO: 2) having 100% sequence homology to SEQ ID NO: 2 of the instant application and lacking a membrane anchoring domain and a method for modifying the fucosylation pattern of a recombinant polypeptide as claimed (entire document; especially column 9, lines 15-40; fucosyltransferase lacking membrane anchoring domain, column 27, lines 1-16, columns 45-46; column 34, lines 27-49; activity assays, columns 35-36; industrial applicability, column 54; claims, columns 73-74).

Therefore, Lowe JB[3] (U.S. Patent No.: 6,268,193, date of patent 07/31/01, claiming priority to US Application No.: 09/042,531 filed on 03/17/1998) or Sasaki et al., (U.S. Patent No.: 7,094,530, date of patent 08/22/06, claiming priority to US Application No.: 08/361,306 filed on 11/29/1994), disclosures are deemed to anticipate claim 107 of the instant invention (also see provided sequence alignments).

New-Claim Rejections 35 USC § 103

Amendments to claims 107 and 108 have necessitated a new rejection.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 107 and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lowe JB[1] (U.S. Patent No.: 5,324,663, date of patent 06/28/94) or Lowe[2] et al., (U.S. Patent No.: 5,770,420, date of patent 06/23/98) or Lowe JB[3] (U.S. Patent No.: 6,268,193, date of patent 07/31/01, claiming priority to US Application No.: 09/042,531 filed on 03/17/1998) or Sasaki et al., (U.S. Patent No.: 7,094,530, date of patent 08/22/06, claiming priority to US Application No.: 08/361,306 filed on 11/29/1994).

Claims 107 and 108 are directed to a method for modifying the fucosylation pattern of a recombinant polypeptide comprising an acceptor moiety (Galβ1, 4GlcNAc-OR or NeuAcα2, 3Galβ1, 4GlcNAc-OR, wherein R is an amino acid, a saccharide, an oligosaccharide or an aglycon group), said method comprising a reaction mixture that comprises a fucose donor moiety, eukaryotic fucosyltransferase to achieve substantially uniform fucosylation pattern and said eukaryotic fucosyltransferase is recombinantly produced FucT-VI of SEQ D NO: 1 or FucT-VII of SEQ ID NO: 2 and wherein said eukaryotic fucosyltransferase lacks a membrane anchoring domain, wherein the concentration of said recombinant FucT-VI or FucT-VII fucosyltransferase is at least 1 Unit/ml.

Lowe JB[1] or Lowe[2] et al., or Lowe JB[3] disclose an isolated polypeptide (SEQ ID NO: 14) annotated as FucT-VI having 100% sequence homology to SEQ ID NO: 1 of the instant application and lacking a membrane anchoring domain and to a method for modifying the fucosylation pattern of a recombinant polypeptide and highly purified polypeptide (entire documents). Similarly, Sasaki et al., disclose an isolated polypeptide (SEQ ID NO: 2) having 100% sequence homology to SEQ ID NO: 2 of the instant application and lacking a membrane anchoring domain and to a method for modifying

the fucosylation pattern of a recombinant polypeptide and highly purified polypeptide (entire document) and as discussed above in 102 (b) and 102(e) rejections. However, said references are silent regarding the concentration of said recombinant FucT-VI or FucT-VII fucosyltransferase is at least 1 Unit/ml. It would have been obvious to a person of ordinary skill in the art to combine the above teachings to reconstitute the expressed polypeptides in a buffer system to any required concentration such as 1 Unit/ml for the assay of the enzymatic activity of FucT-VI or FucT-VII fucosyltransferase enzymes and the use of said enzymes in method for modifying the fucosylation pattern of a recombinant polypeptide. Said references teach the isolation and purification of FucT-VI or FucT-VII fucosyltransferase enzymes, said purity in the range of 95%-98%, the protein concentration of said enzymes such as ug/ul, enzyme assays, methods for glycosylation of products of interest and determining the efficiency of glycosylation by said enzymes in said glycosylated products. Therefore a skilled artisan based on the knowledge and information provided in said teachings will certainly be able to determine the specific concentration i.e., Units/ml of said purified enzymes necessary for successfully fucosylating a recombinant polypeptide (modify the fucosylation pattern) and to reconstitute the purified enzymes in a suitable buffer to the requisite amount of activity. Motivation to combine the teachings derives from the fact that FucT-VI or FucT-VII fucosyltransferase enzymes are employed in industrial applications for their ability to synthesize various sugar molecules and modification of proteins or sugars by their ability to transfer sugar moieties on acceptor sites of peptide or sugar chain acceptors and furthermore said enzymes when provided with known activity information such as

Units/ml will be useful for immediate use and applications without the additional step of determining the specific activity of said enzymes. The expectation of success is high, because, the disclosure of Lowe JB[1] or Lowe[2] et al., or Lowe JB[4] teach an isolated polypeptide (SEQ ID NO: 14) annotated as FucT-VI having 100% sequence homology to SEQ ID NO: 1 of the instant application and lacking a membrane anchoring domain, methods for modifying the fucosylation pattern of a recombinant polypeptide and highly purified polypeptide (entire documents) and similarly, Sasaki et al., disclose an isolated polypeptide (SEQ ID NO: 2) having 100% sequence homology to SEQ ID NO: 2 of the instant application methods for modifying the fucosylation pattern of a recombinant polypeptide and highly purified polypeptide (entire document).

Therefore, the above reference renders claim 107 and 108 *prima facie* obvious to one of ordinary skill in the art.

Summary of Pending Issues

The following is a summary of issues pending in the instant application.

1. Amended claims 107 and 108 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement/New-matter rejection.

2. Claim 107 is rejected under 35 U.S.C. 102(b) as being anticipated by Lowe JB[1] (U.S. Patent No.: 5,324,663, date of patent 06/28/94) or Lowe[2] et al., (U.S. Patent No.: 5,770,420, date of patent 06/23/98).

3. Claim 107 is rejected under 35 U.S.C. 102(e) as being anticipated by Lowe JB[3] (U.S. Patent No.: 6,268,193, date of patent 07/31/01, claiming priority to US Application No.: 09/042,531 filed on 03/17/1998) or Sasaki et al., (U.S. Patent No.:

7,094,530, date of patent 08/22/06, claiming priority to US Application No.: 08/361,306 filed on 11/29/1994).

4. Claims 107 and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe JB[1] (U.S. Patent No.: 5,324,663, date of patent 06/28/94) or Lowe[2] et al., (U.S. Patent No.: 5,770,420, date of patent 06/23/98) or Lowe JB[3] (U.S. Patent No.: 6,268,193, date of patent 07/31/01, claiming priority to US Application No.: 09/042,531 filed on 03/17/1998) or Sasaki et al., (U.S. Patent No.: 7,094,530, date of patent 08/22/06, claiming priority to US Application No.: 08/361,306 filed on 11/29/1994).

Allowable Subject Matter/Conclusion

None of the claims are allowable.

Final Comments

To insure that each document is properly filed in the electronic file wrapper, it is requested that each of amendments to the specification, amendments to the claims, Applicants' remarks, requests for extension of time, and any other distinct papers be submitted on separate pages.

It is also requested that Applicants identify support, within the original application, for any amendments to the claims and specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathirama Raghu whose telephone number is 571-272-4533. The examiner can normally be reached between 8 am-4: 30 pm EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nashaat Nashed can be reached on 571-272-0934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications. Any inquiry of a general nature or relating to the status of the application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ganapathirama Raghu/
Patent Examiner
Art Unit 1652
May 27, 2008.